

Using Computer-like Rules to Give Automatic Grammatical Written Corrective Feedback

A Case Study of Structural Particles

“的”, “地” and “得”

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Abstract: Mandarin speakers often confuse three structural particles “的”, “地” and “得” in their formal writings and Chinese teachers often correct these errors in students’ essays. To reduce Chinese teachers’ laborious workload, the present research aims to investigate how to use technology to efficiently correct grammar errors with feedback. All three structural particle instances were analyzed in 50 primary one level HK students’ essays. Their grammaticality judgments were based on three rules derived from literature: (1) A+的+B. B is always a Noun. A is used to modify B; (2) A+地+B. B is always a Verb. A is used to modify B to indicate how; (3) A+得+B. A is always a Verb. B is used to modify A to indicate how. 700 out of 804 instances of “的”, “地” and “得” were identified as structural particles. By using automatic Chinese parsing software NLPPIR-ICTCLAS (see Zhang, 2018), 80% could be judged easily and accurately while the rest required a deeper analysis, which indicates that automatic Part of Speech (PoS) judgment is quite useful and helpful to Chinese teachers’ grammatical feedback on these three structural particles in students’ essays. Difficulties and problems in grammaticality judgment from a deep level were further analyzed. Corresponding solutions and directions for future research were also discussed. This research can shed light on how to use Part of Speech (PoS) parsing software to facilitate automatic grammatical written corrective feedback and how technology can enhance language learning and teaching in a Chinese language education context.

Keywords: grammar, automatic, Written Corrective Feedback (WCF), Chinese, structural particles, 的, 地, 得

1. Introduction

“的”, “地” and “得” are three structural particles of high frequency due to their active role in sentence structure formulation. However, they are often easily mixed up by Mandarin speakers in their formal writings. In daily conversations, Mandarin speakers do not need to distinguish one with another since they share similar pronunciation “-de” in Mandarin speaking. However, in formal writing, these three words are used in different ways, especially when they collocate with other specific words in the discourse. The confused uses of them in Chinese formal writings decrease both language expression accuracy and people’s communication efficiency.

Due to the above situation, Chinese teachers highly emphasize the distinctions among these three structural particles in their daily teaching, especially through giving direct grammatical corrective feedback on students’ essays. However, such grammatical written corrective feedback can be ineffective or inefficient. From students’ perspective, on the one hand, with only pure error corrections but insufficient corresponding grammar knowledge scaffolding, students still do not know how to use these three structural particles accurately, and thus might make these errors again in their future writings. On the other hand, learners need to go through the language learning process from knowing a new

grammatical knowledge to using it in their natural communication accurately, since it requires practicing efforts to crystallize such new knowledge and to integrate it with their prior knowledge. Thus, in some cases, learners keep making grammatical errors until they reach the final crystallization stage.

As a result, Chinese teachers have to correct such errors in their students' essays again and again so as to help their students with the grammatical knowledge gap identification and new grammar knowledge crystallization, which increases their working burden due to more grammatical written corrective feedback. To reduce Chinese teachers' laborious workload, the present research aims to investigate how to use technology to give grammatical written corrective feedback in an efficient and economic way.

We suggest the following procedure: first, identify these three structural particles “的”, “地” and “得” in students' essays; next, find corresponding collocative words occurring before and after these three structural particles “的”, “地” and “得” within each discourse instance; then, apply the following three rules derived from previous relevant literature (A represents collocative words occurring before these three structural particles within the discourse whereas B represents collocative words occurring after them) centering on Part of Speech (PoS) with the support of automatic Chinese parsing software NLP-ICTCLAS (see Zhang, 2018):

- 1). A+的+B. B is always a Noun. A is used to modify B;
- 2). A+地+B. B is always a Verb. A is used to modify B to indicate how;
- 3). A+得+B. A is always a Verb. B is used to modify A to indicate how.

The present research might shed some light on how to use technology to facilitate grammatical written corrective feedback in Chinese learning and teaching and beyond.

2. Literature Review

2.1 “的”, “地” and “得” as Structural Particles in Formal Writing

According to the literature review, previous research on “的”, “地” and “得” as structural particles in Chinese formal writing mainly centers on answering two questions. One, how “的”, “地” and “得” should be used grammatically as structural particles in formal writing. Two, how “的”, “地” and “得” are actually used in different kinds of language situation contexts.

2.1.1 How They Should be Used Grammatically as Structural Particles in Formal Writing

Studies focusing on how “的”, “地” and “得” should be used grammatically as structural particles in formal writing, mainly discussed their standard usages centering on their usage similarity and difference (e.g., Peng & Liu, 2013; Wang, 2010). A large group of literature was written to facilitate Chinese language teaching and learning within the education context. The audience for these studies mainly are primary school students (e.g., Chen, 2011; Ding, 1996; Fu, 2014), secondary school students (e.g., Huo & Zhang, 2015; Wang, 2010), and their teachers. These studies pointed out the high frequency and high probability of confusion by students when using these particles while learning Chinese.

Thus, the above mentioned studies present very clear and fine-grained grammatical explanations on how to use “的”, “地” and “得” as structural particles accurately in formal writing, aiming at facilitating students' better understanding and command of their grammatical usages.

2.1.2 How They Are Actually Used in Different Kinds of Language Situation Contexts

The second group of studies focuses on how “的”, “地” and “得” are actually used in different kinds of language situation contexts. These studies usually center on the commonly mixed usages of these structural particles and summarize the common error patterns in contrast with the standard usages (e.g., Du, 2011; Liu, 2006; Luan, 2020; Zuo, 2008). Studies were also conducted in different specific discourse context such as in medical discourse (e.g., Xu, 1988) and editing discourse (e.g., Yang, 2017),

which contribute to a more comprehensive picture of all error patterns, especially within these special languages using contexts.

Studies derived from Teaching Chinese as a Second Language is one important component of this group of literature. Usually, scholars summarize the erroneous usage patterns made by Chinese L2 learners and analyze these errors for their error type categorization and further analyze why L2 learners made these errors by using relevant Applied Linguistics Theories such as Second Language Acquisition, Inter-language, Error Analysis and so on (e.g., Deng, 2011; Guo, 2011; Wang, 2020). Useful and practical learning and teaching advice are derived from these research to facilitate Teaching Chinese as a Second Language on issues like textbook and follow-up exercise compilation (e.g., Ma, 2013), curriculum design (e.g., Zhou, 2011), teaching strategy improvement (e.g., Yang, 2014) and so on.

2.2 Written Corrective Feedback (WCF) in Chinese Writing

Compared with other language (such as English) contexts, studies on Written Corrective Feedback (WCF) on Chinese writings are very small in number. Fang and Wang (2019) investigated teachers' feedback to Chinese L2 learners' writings and students' corresponding responses in their writing revisions. Within a computer-mediated WCF context, Hsieh, Hiew and Tay (2017) studied how Chinese teachers adopted an automated essay marking system to give instant WCF towards students' writings. Han (2019) investigated how teachers used an online system to offer WCF. Both studies explored Chinese L2 learners' perceptions and views towards teachers' WCF on their writings. Centering on facilitating self-identification and self-correction of grammar errors, Ai (2017) conducted research tracing how feedback dynamically changed during the corrective feedback process on the ba-construction (“把”) in Chinese L2 acquisition within the context of computer-assisted language learning.

2.3 Automatic Chinese Grammatical Written Corrective Feedback (WCF)

Many studies use computational models, statistical analyses or machine learning to detect Chinese grammar errors, correct them or give corrective feedback (e.g., Chang, et al., 2014; Lee, Tseng, & Chang, 2019; Ren, Yang, & Xun, 2018; Yeh, et al., 2015). These studies require extensive technical expertise, and hence are not comprehensible to most Chinese teachers. Hence, this line of research has a gap: few studies that investigate how technology can help primary or secondary school Chinese teachers with little technical expertise teach their students to detect errors, correct them, understand the correct and incorrect grammatical uses, and reduce such errors in their future writing. Thus, the present research aims to fill this niche by taking a step towards Part of Speech (PoS) parsing computer software to facilitate Chinese teachers' grammatical Written Corrective Feedback (WCF) on the use of three structural particles “的”, “地” and “得” in students' essays.

3. Research questions:

For Chinese teachers' grammatical written corrective feedback on the three structural particles “的”, “地” and “得” in students' essays:

1. To what degree can automatic part of speech (PoS) parsing computer software help with grammaticality judgments?
2. What kinds of difficulties (problems) occur during the process mentioned in 1?
3. What advantages and disadvantages of automatic part of speech (PoS) parsing compared with traditional written corrective feedback (WCF)?

4. Methodology

4.1 Data Collection

After getting the ethics approval from the local schools, we collected Chinese essays written by primary one level students from HK local schools and randomly selected 50 essays for our research data. All collected essays were scanned in PDF format first and transcribed into the TXT file later. The 50 essays were automatically segmented and parsed by using the NLP-ICTCLAS software (Zhang, 2018) and later input into one Microsoft Word File.

First, we searched for Chinese characters “的”, “地” and “得” in the Microsoft Word File and highlighted all of them. Next, we read through the discourse and judged whether “的”, “地” and “得” used as a structural particle (e.g., rather than a part of a content word) within each collected instance. Then, we collected all structural particles using instances (each complete sentence) and input them into three spreadsheets in Microsoft Excel respectively. Considering the grammaticality judgment in this research was PoS-sensitive, we separated “的”, “地” and “得” from the occurring collocative words before and after these three structural particles within each instance like this in the Excel spreadsheets respectively:

Table 1. An Example of Our Data Collection by Using the NLP-ICTCLAS Software (Zhang, 2018)

小明/nr2	的/ude1	父母/n
Xiaoming's parents		
她/rr	的/ude1	名字/n
Her name		

4.2 Data Analysis

According to the three rules derived from previous relevant literature (A represents collocative words occurring before these three structural particles within the discourse whereas B represents collocative words occurring after them): 1). A+的+B. B is always a Noun. A is used to modify B; 2). A+地+B. B is always a Verb. A is used to modify B to indicate how; 3). A+得+B. A is always a Verb. B is used to modify A to indicate how.

We introduce the NLP-ICTCLAS software (Zhang, 2018) to help with parsing our essay corpus data as follows:

Table 2. An Example of Our Data Analysis by Using the NLP-ICTCLAS Software (Zhang, 2018)

善良/a 的/ude1 心/n	(kind heart)
快快/d 地/ude2 吃/v 了/u1e	(fastly ate)
模仿/v 得/ude3 最/d 相似/a	(imitate most similar)

Each alphabetic symbol following the “/” indicates the Part of Speech (PoS) automatically parsed by the computer software: “a” indicates adjective, “n” indicates noun, “d” indicates adverb, “v” indicates verb and “ule” indicates past tense. “的”, “地” and “得” are parsed as ude1, ude2 and ude3 respectively due to their different grammatical usages and functions.

We searched for the following 3 patterns in three spreadsheets respectively: 1). 的 + Noun; 2). 地 + Verb; 3). Verb + 得. Next, we separated them into those that followed this pattern versus those that did not. For the latter, we first judged whether they were grammatically right and separated the right from the wrong ones. Then, we explored the relevance of the patterns of each instance and put instances with similar patterns into the same group. Finally, we described the sentential pattern for instances within each group and conducted statistical analysis on frequency and percentages counting by using relevant functions in Microsoft Excel.

5. Results and Discussions

5.1 Focusing on “的”

Table 3. Results for Structural Particle “的”

的	591
Satisfy the rule: A+的+B. B is always a Noun. A is used to modify B. e.g., 牠/n 的/ude1 名字/n (his name)	471
Reasons identified for not satisfying the rule on the surface level (but are actually grammatically right):	
1. PoS problem	79
1). The PoS should be judged by the head of the structure of B e.g., 我/rr 的/ude1 好/a 朋友/n (my good friends)	69
2). B is a multi-category word (the same word has more than one PoS) e.g., 春/tg 風/n 的/ude1 陪伴/vn (the companionship of spring breeze)	10
2. Multiple rules application: sentential/discourse > word PoS collocation	40
1). Judgment Verb “是/會” (like be-Verb/modal Verb in English) + A + 的 e.g., 媽/n 媽/n 總/n 是/vshi 和/cc 藹/n 可/v 親/n 的/ude1 (Mom is always amiable)	27
2). Omission occurs between “的” and B, the PoS of the omitted part is usually Noun. e.g., 而/cc 牠/n 最/d 愛/n 吃/v 的/ude1 是/vshi 野果/n 和/cc 種/n 籽/ng。 (And its favorite food is wild fruits and seeds.)	13
Error	1
“的” should not be followed by a Verb. e.g., 嘩/n 啦/y 嘩/n 啦/y 的/ude1 下/f 起/vf 雨/n 來/n 了/y (It starts raining)	1

Among the 646 collected “的” usages, 591 were identified as structural particles. 471 instances satisfied the rule “A+的+B. B is always a Noun. A is used to modify B.”, which had the highest frequency. One instance was identified as grammatically wrong since B is a verb within this instance whereas it should be a Noun according to the rule. For the other 119 instances, all of them are grammatically right but only satisfy the rule for a deeper further analysis of the sentence structure beyond the surface level. There are two reasons for this rule satisfaction inconsistency.

Firstly, the PoS problem, namely, computers have problems in judging the PoS of B if there are any modifiers before B with other PoS or B is a multi-category word. For the above mentioned 471 instances satisfying the rule, B is always one specific pure noun. However, there are also other circumstances. One situation is an inserted modifier between “的” and B, (69 of 79 instances for this PoS problem). In such a situation, the inserted modifier and B work together to form a whole phrase. B determined the PoS of the whole phrase as the head of the phrase. Thus, the PoS of the whole structure after “的” was still a noun, which allowed it to still satisfy the rule. For example, within the structure “我/rr 的/ude1 好/a 朋友/n (my good friends)”, adjective “好/a (good)” is used to modify noun “朋友/n (friends)”. The PoS of the head “朋友/n (friends)” determined the PoS of the whole phrase “好/a 朋友/n (good friends)” as noun (rather than adjective). Thus, “我/rr 的/ude1 好/a 朋友/n (my good friends)” satisfies the rule “A+的+B. B is always a Noun. A is used to modify B.” Another situation is the multi-category word, which accounted for 10 out of the 79 instances of the PoS problem in total. Since such words had more than one PoS categories, the PoS might be judged as another category rather than the one that fitted into the context, which imposed a negative impact on rule judgment. For instance, in “春/tg 風/n 的/ude1 陪伴/vn (the companionship of spring breeze)”, the multi-category word “陪伴/vn (companionship)” might be parsed as a verb (but is actually used as a noun in this context), which might mislead people to judge it as breaking the rule “B is always a Noun.”

Secondly, the multiple rules application problem: when multiple grammar rules are applicable but incompatible, computers have difficulty choosing which rule to apply. These data had 40 such instances, mostly in the following two situations at the discourse level. One situation was the judgment sentential pattern “.....是/會.....的” (... be-Verb/will...), 27 of 40 instances. For instance, “媽/n 媽/n 總/n 是/vshi 和/cc 藹/n 可/v 親/n 的/ude1 (Mom is always amiable)” did not satisfy the rule “A+的+B. B is always a Noun. A is used to modify B.” as there was no such a B in this sentence. However, it

satisfied the judgment sentential pattern “.....是/會.....的” (... be-Verb/will...) and thus was still grammatically right. The other situation was omission at the discourse level, 13 of 40 instances. For instance, in the sentence “而/cc 牠/n 最/d 愛/n 吃/v 的/ude1 是/vshi 野果/n 和/cc 種/n 籽/ng。 (And its favorite food are wild fruits and seeds.)”, the noun between “的” and “是” (be-Verb) was omitted, so this sentence did not satisfy the rule “A+的+B. B is always a Noun. A is used to modify B.” as the PoS of B (是/vshi) (be-Verb) in this sentence is a Verb rather than a Noun and can be misjudged as ungrammatical. However, if we judge from a further deeper discourse/sentential (rather the surface level), all instances included in the multiple rules application category were grammatically right, which also seemed indicate that when multiple rules applied for the same sentences, the deeper rules (e.g., discourse/sentential rules) tend to be prioritized over surface rules (e.g., lexical collocation rules).

5.2 Focusing on “地”

Table 4. Results for Structural Particle “地”

地	69
Satisfy the rule "A+地+B. B is always a Verb. A is used to modify B to indicate how". e.g., 快快/d 地/ude2 吃/v 了/ule 早餐/n (ate breakfast quickly)	59
Reasons identified for not satisfying the rule on the surface level (but are actually grammatically right):	
PoS problem (PoS should be judged by the head of the structure)	10
1. The PoS of B should be judged based on the head of B. There are inserted modifiers between “地” and B. e.g., 高/a 興/n 地/ude2 大/a 叫/vi (shout aloud happily)	3
2. The PoS of B should be judged based on the head of B. There are inserted complements between “地” and B. e.g., 緊/n 張/n 地/ude2 向/p 她/rr 道歉/vi (apologize to her nervously)	7

98 instances of “地” were collected from our corpus, among which 69 used as structural particles. 59 out of 69 instances satisfied the rule “A+地+B. B is always a Verb. A is used to modify B to indicate how”. Very similar to the PoS problem with “的”, inserted modifiers between “地” and B were also identified in examples like “高/a 興/n 地/ude2 大/a 叫/vi (shout aloud happily)”. The adjective “大/a” (aloud) was used as an insertion between “地” and verb “叫/vi (shout)”, which were 3 instances in total. Another case was a complement insertion between “地” and B. For instance, in “緊/n 張/n 地/ude2 向/p 她/rr 道歉/vi (apologize to her nervously)”, “向/p 她/rr (to her)” was the inserted complement that modified the following verb “道歉/vi (apologize)” (7 instances). In both cases, the PoS problem could be solved via judging the PoS of the head of the structure after “地” in “A + 地 + B”.

5.3 Focusing on “得”

Table 5. Results for Structural Particle “得”

得	
Satisfy the rule “A+得+B. A is always a Verb. B is used to modify A to indicate how”.	40
1. B is always an Adj./Adv. e.g., 看/v 得/ude3 入神/a (watch entranced) or 活/v 潑/n 得/ude3 很/d ! (very outgoing)	27
2. B is usually a Verb. B often modifies A to indicate how--the extent of A. e.g., 高/a 興/n 得/ude3 跳/vi 了/ule 起/vf 來/n。 (jumped with joy)	4
3. B is a consequential clause indicating results/influence towards the agent. Could	9

not define the PoS of B as it is a clause.

e.g., 表演/v 得/ude3 令/v 觀/n 眾/n 樂/n 不可/v 支/q (the performance made the audience overjoyed)

For “得”, 40 structural particle uses were identified out of from the 60 collected instances. All of them satisfy the rule “A+得+B. A is always a Verb. B is used to modify A to indicate how.” and two minor groups were categorized based on the PoS of B. Within the first group, the PoS of B were all adjectives or adverbs like “看/v 得/ude3 入神/a (watch entranced)” or “活/v 潑/n 得/ude3 很/d ! (very outgoing)”. For the other group, B was a complement of A. The PoS of B could be a pure verb like in “高/a 興/n 得/ude3 跳/vi 了/u! 起/vf 來/n ◦ (jumped with joy)”. Sometimes, B could also be a clause or sentence like in “表演/v 得/ude3 令/v 觀/n 眾/n 樂/n 不可/v 支/q (the performance made the audience overjoyed)”. However, the latter within the second group would be very difficult to be automatically analyzed by the computers at the discourse level.

6. General Discussion

As we have discussed above, among the 804 instances of “的”, “地” and “得” extracted from 50 primary one local students’ essays, 700 were identified as structural particles. 79.86% (472 out of 591) could be successfully judged on the surface level of the function use of “的”, 85.51% (59 out of 69) for that of “地” and 77.5% (31 out of 40) for that of “得”. Generally speaking, 80.29% (562 out of 700) could be judged accurately on the surface level through using the automatically parsed PoS and the rest 19.71% (138 out of 700) needed deeper analysis, which indicates that for Chinese teachers’ grammatical feedback on the three structural particles “的”, “地” and “得” towards students’ essays, automatic PoS judgment is quite useful and helpful. The error rate is very low (only 1 out of 804, approximate 0.12%), which is inconsistent with the conclusion derived from a large amount of previous studies conducted by Mandarin speaker scholars before (e.g., Du, 2011; Fu, 2014; Gong, 2016; Huo & Zhang, 2015). We hypothesized that it is because the essays collected in this study were produced by HK primary students whose most frequently used language is their mother tongue Cantonese. Whereas these three structural particles have functionally equivalent words in Cantonese (“嘅” for “的”, “咁” for “地” and “到” for “得”) and they do not share similar pronunciation (whereas they share similar pronunciation “-de” in speaking Mandarin). Thus, the possibility of confusing them due to their pronunciation similarity is much lower. Future research could provide further investigation on this issue with a larger data set.

Table 6. *A Summary of Results for Structural Particles Analysis (Surface & Deep)*

Structural particles	Surface level	Deeper analysis
591	472 (1 error) (79.86%)	119 (20.14%)
69	59 (85.51%)	10 (14.49%)
40	31 (77.5%)	9 (22.5%)
700 (100%)	562 (80.29%)	138 (19.71%)

Following are the two main categories of difficulties/problems that were confronted with during the automatic grammatical written corrective feedback correction process in this study:

6.1 PoS Identification

As we have discussed above, automatic PoS identification is good for its efficiency and convenience dealing with large amounts of data in automatic PoS segmentation and parsing. We identified the following specific aspects which can be further developed:

Firstly, PoS of 4 character idioms. 4 character idioms is one quite unique and special expression in Chinese language. They are not regarded as an integrated unit but as four independent Chinese

characters in automatic segmentation and parsing, which requires more manual work on PoS judging on them for the present stage.

Secondly, PoS of multi-category words. Multi-category words are words that have several different PoS. Unlike Germanic languages (like English, German etc.) which are rich in inflected forms and morphological changes, Chinese words are relatively stable in form (inflection) and the PoS is relatively reflected more in other aspects like its collocation with other words, functions in sentential patterns and so on. Thus, it is difficult for computers to parse the PoS of multi-category words accurately since they cannot judge the PoS according to the specific language usages and context. Furthermore, the PoS of the same Chinese word would even change flexibility for different specific usages which is derived from classical Chinese.

Thirdly, the PoS of phrases. Most PoS are word-based, namely, they segment the independent words based on frequency and parse the PoS accordingly. But sometimes the judged target might be beyond the word, like phrases or collocations. In such a situation, the PoS of the whole phrase or collocation should be judged based on the head of the structure. However, the machine could not realize this very well for the present as it requires semantic and syntactic analysis at a higher level.

Fourthly, the inequivalence between PoS and sentence constituents. Many grammaticality judgments are based on grammar rules, which are closely related to sentence constituents (such as subjects, predicates, objects, attributives, adverbials, complements, predicatives etc.) especially when judging at the sentential level. However, the PoS cannot correspond with them completely. For instance, the PoS of the complement could be an adjective, adverb, verb or sometimes even a clause. Thus, finding a way to bridge the gap between PoS and sentence components will be meaningful and contribute to using PoS to facilitate grammaticality judgments.

6.2 Multiple Rules Application in Grammaticality Judgment

When multiple rules could be applied to the same language phenomenon, the grammaticality judgment becomes complicated as the possibility becomes larger in number. Sometimes, we cannot judge the usage as ungrammatical when it does not fit well into one grammar rule from one language aspect (e.g., word collocation from the lexical level) since it might suit another rule from another language aspect (e.g., sentence pattern from the discourse level). Thus, how to manipulate and prioritize multiple rules within the same discourse text is a question worth investigating.

Another issue lies in the potential inconsistency between language structure on the surface level and deep level. For instance, the missing of some grammatical components on the surface level might be attributed to omission at the discourse level rather than lack of sentential components ungrammatically. For computers, it is much easier to detect the written down part on the surface level; however, it is very hard to detect and judge the omitted part, or the underlying full picture of the whole sentence structure. Thus, a more fine-grained hierarchical sentential structure analysis and semantic analysis at the discourse/sentential level is much needed for future research.

In sum, compared with traditional manual written corrective feedback given by Chinese teachers, this automatic part of speech (PoS) parsing enables written corrective feedback in an efficient way for grammaticality judgment and thus saves teachers' time and energy by relieving them from their laborious workload. Furthermore, such methods are applicable to similar grammar errors. However, the approach requires transferring abstract grammar rules into specific ones suitable for computer processing. Further, eliminating counter-examples is critical.

7. Limitations and Future Research

This study has several limitations. Firstly, the data size is small, which might limit its representativeness. Secondly, the pronunciations of these three Chinese characters are completely different (i.e., “dik1, dei6, and dak1”) in Cantonese but are very similar in Mandarin (i.e., all three are “de”). Such pronunciation distinctions help HK students distinguish them one from another, which leads to low error rates. Future research could use larger writing data size from non-HK students (e.g., English L1 Mandarin L2 speakers).

8. Conclusion

This small-scale research focus on the grammatical written corrective feedback on three frequently use but easily mixed up structural particles “的”, “地” and “得” in 50 collected HK school students' essays. An automatic Chinese parsing software NLP-ICTCLAS (see Zhang, 2018) was adopted to facilitate the automatic part of speech analysis for the sake of grammatical judgment of these three structural particles. Most previous research studied the written corrective feedback of these three structural particles manually, which usually summarized the error patterns and gave further elaborations with simple examples. The present research solves this problem through adopting automatic PoS computer software to facilitate grammaticality judgment. Some difficulties and problems confronted with during the automatic grammaticality judgment process are also mentioned with corresponding future direction. The present research could be regarded as an example of how to use computer software to facilitate automatic grammatical written corrective feedback towards Chinese learners' writings, which hopefully, could shed some light on more good research for technology-enhanced language learning and beyond.

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